Science, Service, Stewardship

SEFSC Research Activities

2014 Spring Species Working Groups Meeting
of the Advisory Committee to the U.S. Section to ICCAT
April 1st–2nd, 2014 Rockville, MD

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ICCAT CICTA CICAA

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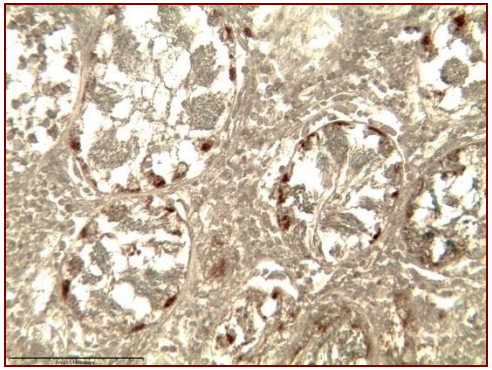
Elasmobranch Life History (ongoing)

Updating age, growth, reproduction and diet of pelagic species

This information is necessary to revise ecological risk assessments and for inputs to stock assessment models.

- Update life history of silky shark
- In collaboration with U. North Florida, development of non-invasive techniques for determining maturity (e.g. plasma assayed for testosterone in males and estradiol in females using radioimmunoassay)



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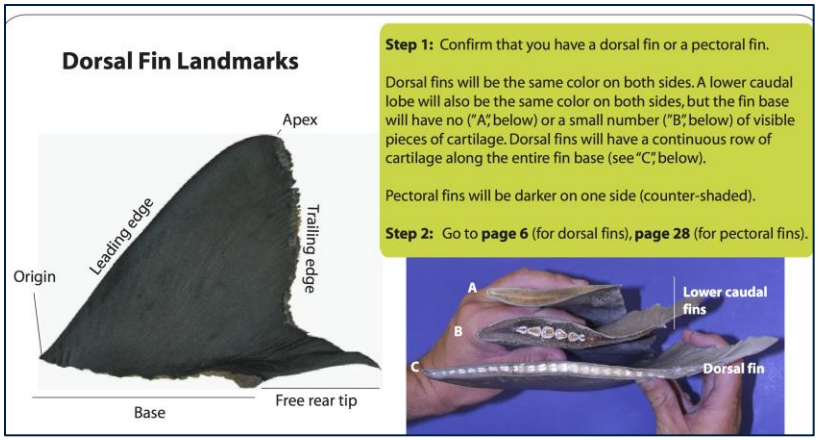
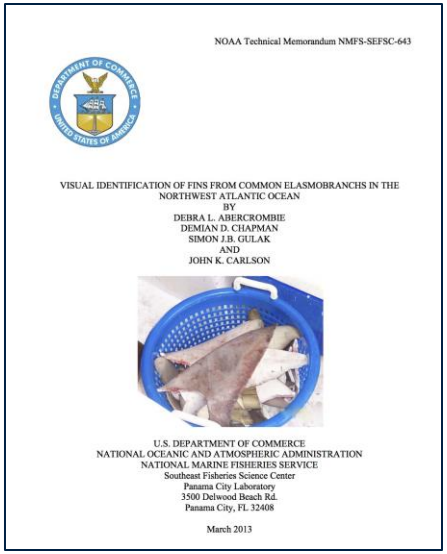
Field Guide to Identify Shark Fins (completed)

- guide is for the NW Atlantic but it has applicability to conspecifics globally
- represents ID for dorsal fin for 19 species and paired pectoral fins for 20 species
- laminated copies to be produced for enforcement and custom agents




NOAA Technical Memorandum NMFS-SEFSC-643

VISUAL IDENTIFICATION OF FINS FROM COMMON ELASMOBRANCHS IN THE NORTHWEST ATLANTIC OCEAN

BY

DEBRA L. ABERCROMBIE
DEMIAN D. CHAPMAN
SIMON J.B. GULAK
AND
JOHN K. CARLSON

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE
Southeast Fisheries Science Center
Panama City Laboratory
3500 Delwood Beach Rd.
Panama City, FL 32408

March 2013

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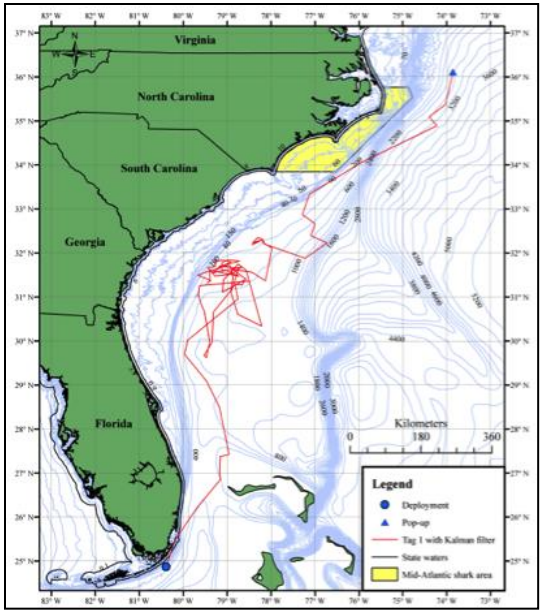
Habitat Utilization (ongoing)

- Evaluation of closed area to reduce mortality of dusky shark
- Predicting essential habitat features for oceanic whitetip shark



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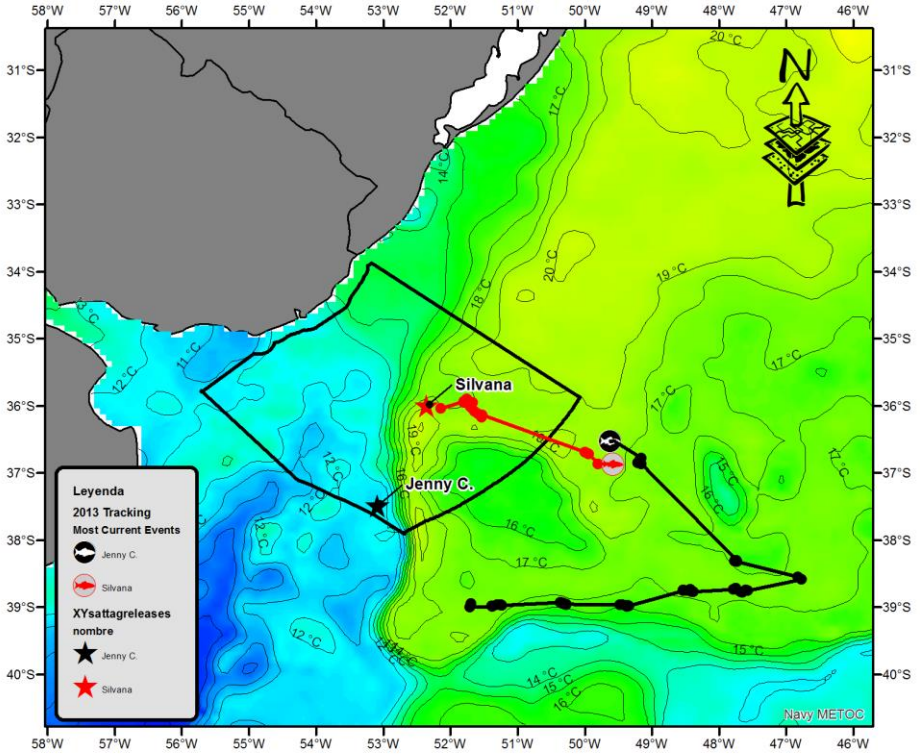
Movement Patterns/Habitat Utilization (ongoing)

Movement patterns and habitat utilization of blue sharks in the SW Atlantic (collaboration with Uruguay)

10 satellite tags deployed to date



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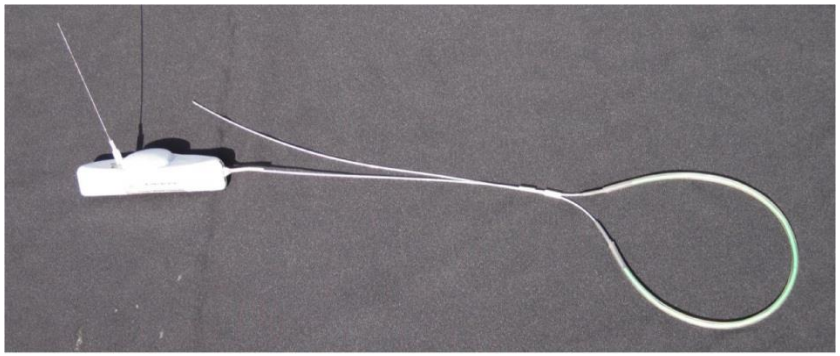
Movement Patterns/Habitat Utilization/ Age and growth (planned for 2014, pending funding)

Movement patterns, habitat utilization, stock structure, and age and growth of porbeagle sharks in the SW Atlantic (collaboration with Uruguay and Canada)



Ecosystem Research :
Gulf of Mexico Integrated Ecosystem Assessment

NOAA Technical Memorandum NMFS-SEFSC-653

ECOSYSTEM STATUS REPORT FOR THE GULF OF MEXICO

Mandy Karnauskas, Michael J. Schirripa, Christopher R. Kelble, Geoffrey S. Cook and J. Kevin Craig

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
75 Virginia Beach Drive
Miami, Florida 33149

December 2013

GOM Ecosystem Status Report

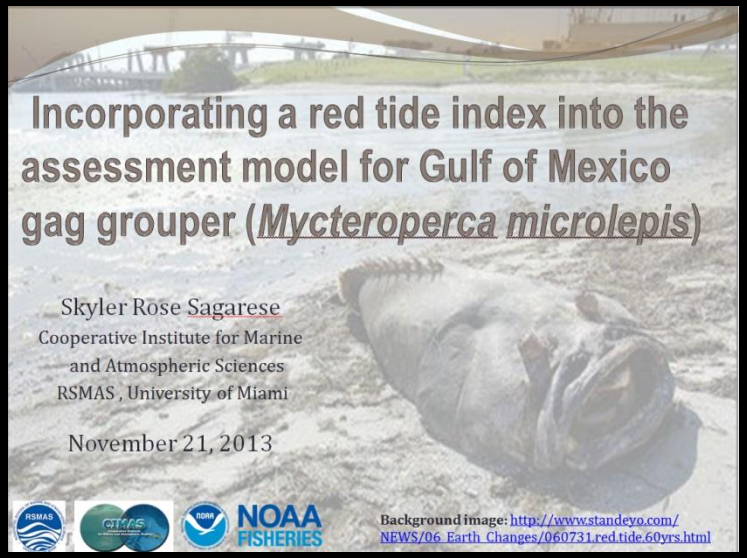
- Report potential indicators for tracking ecosystem state
- Synthesize existing information
- Facilitate discussion of Integrated Ecosystem Assessment s within the scientific and management community

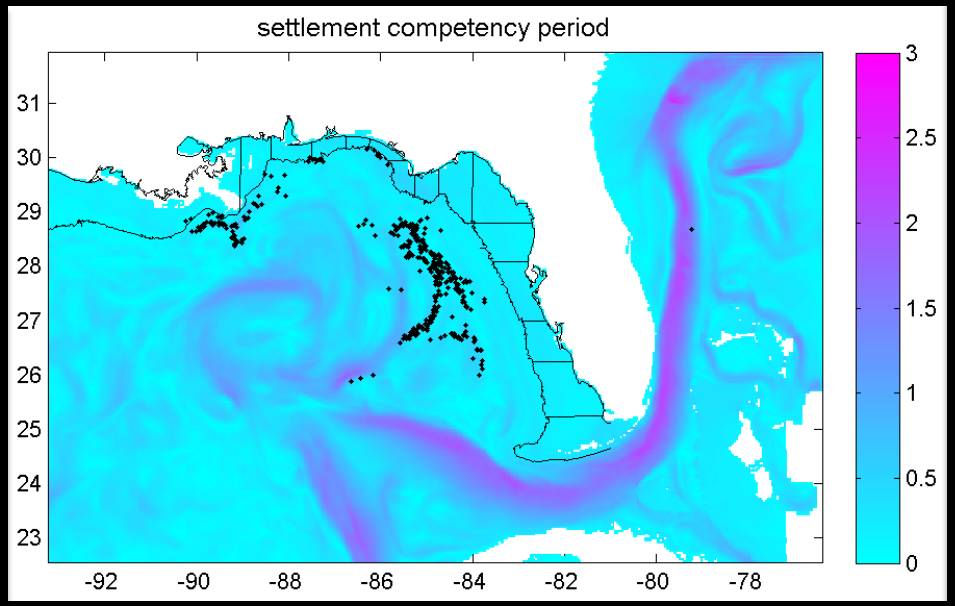
GOM IEA Contributions to Assessment Process

- An index of red tide events within the Gulf of Mexico was developed

- A Conductivity Modeling System was used to examine role of physical oceanography in recruitment events

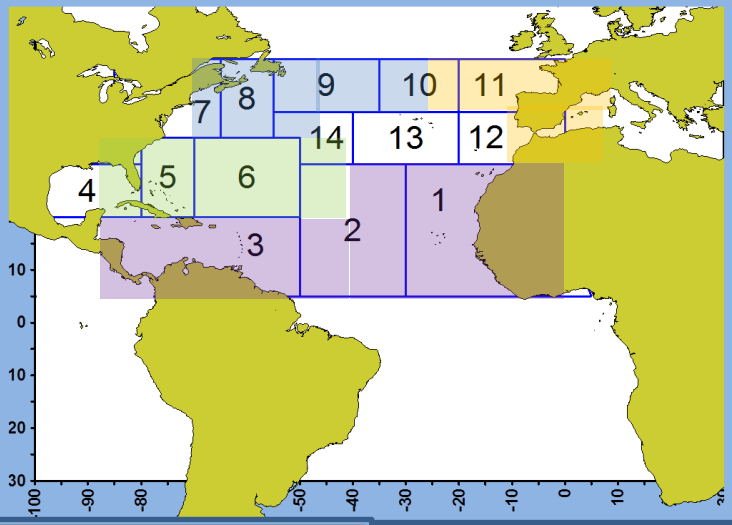
- The first IEA Working Group was established during the GOM gag assessment and successfully integrated red tide and larval dispersal into the formal stock assessment



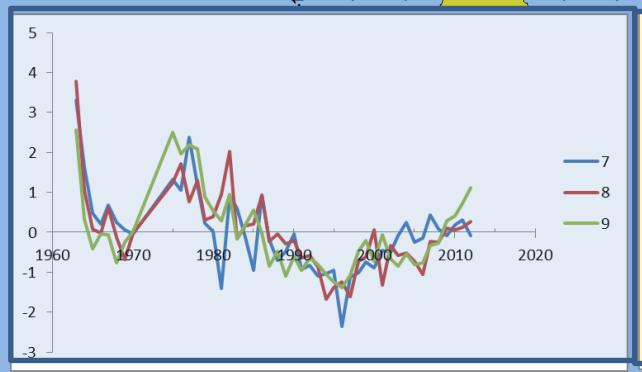


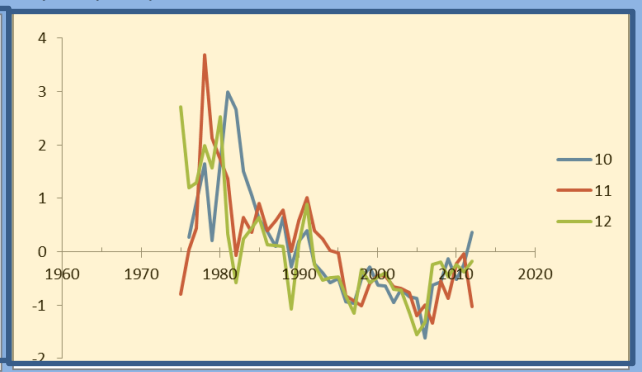
Ecosystem Research :
North Atlantic Swordfish

Area specific Catch per Unit Effort



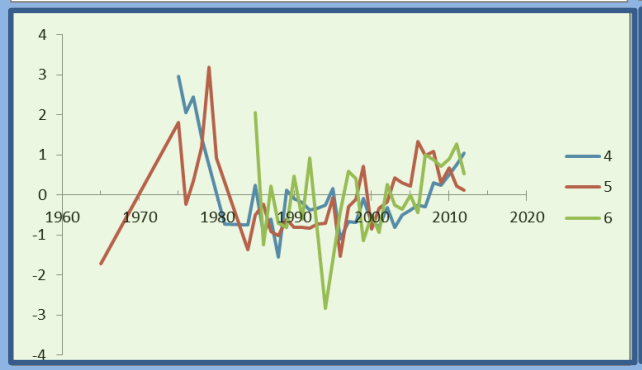
Northwest

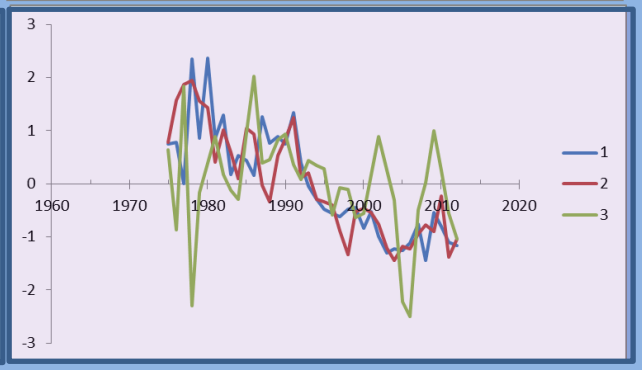




Northeast

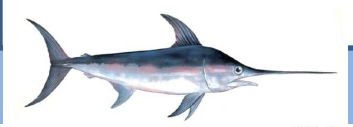
Middle

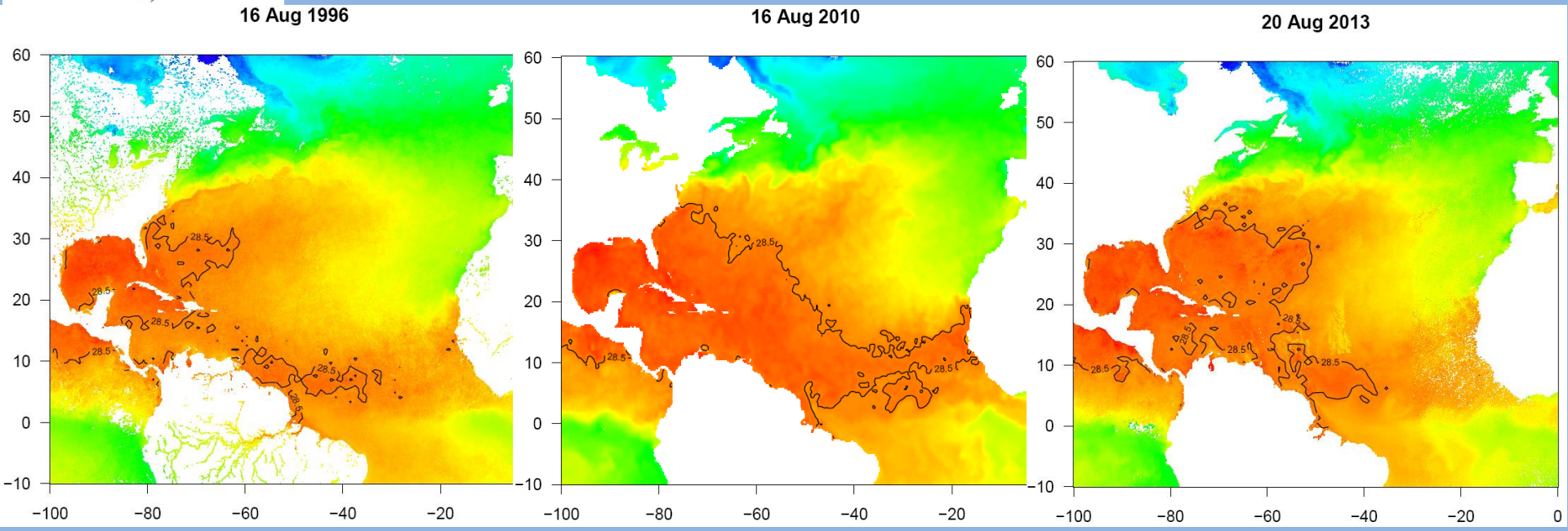


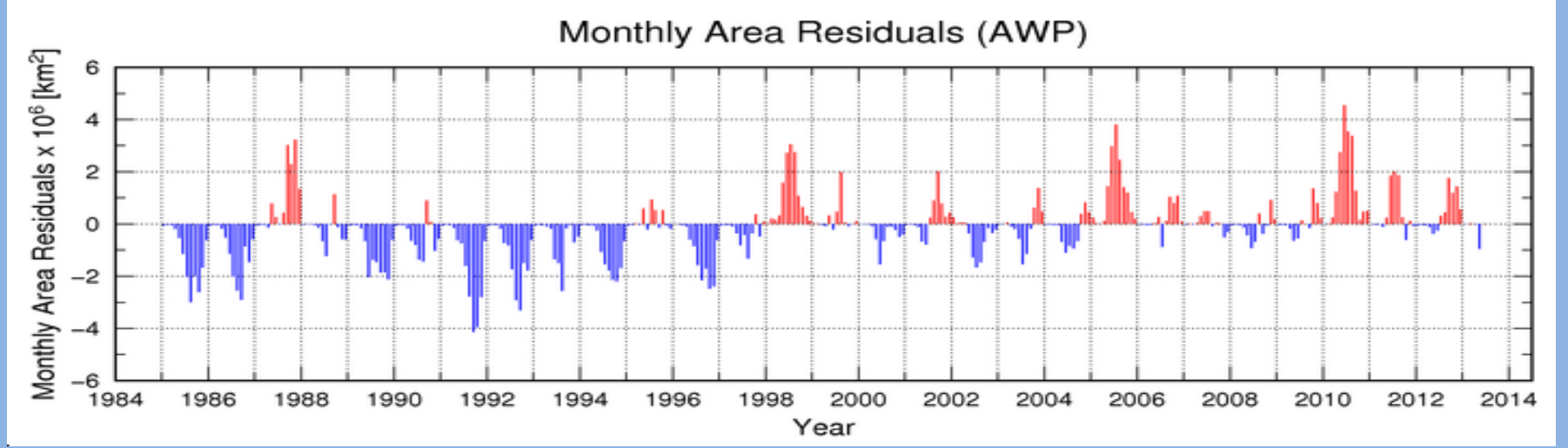


Southeast/west

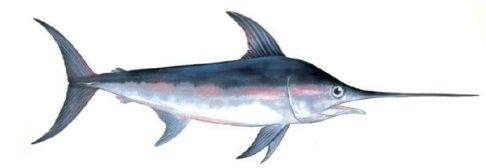
Atlantic Warm Pool (>28.5°C) Varies Annually

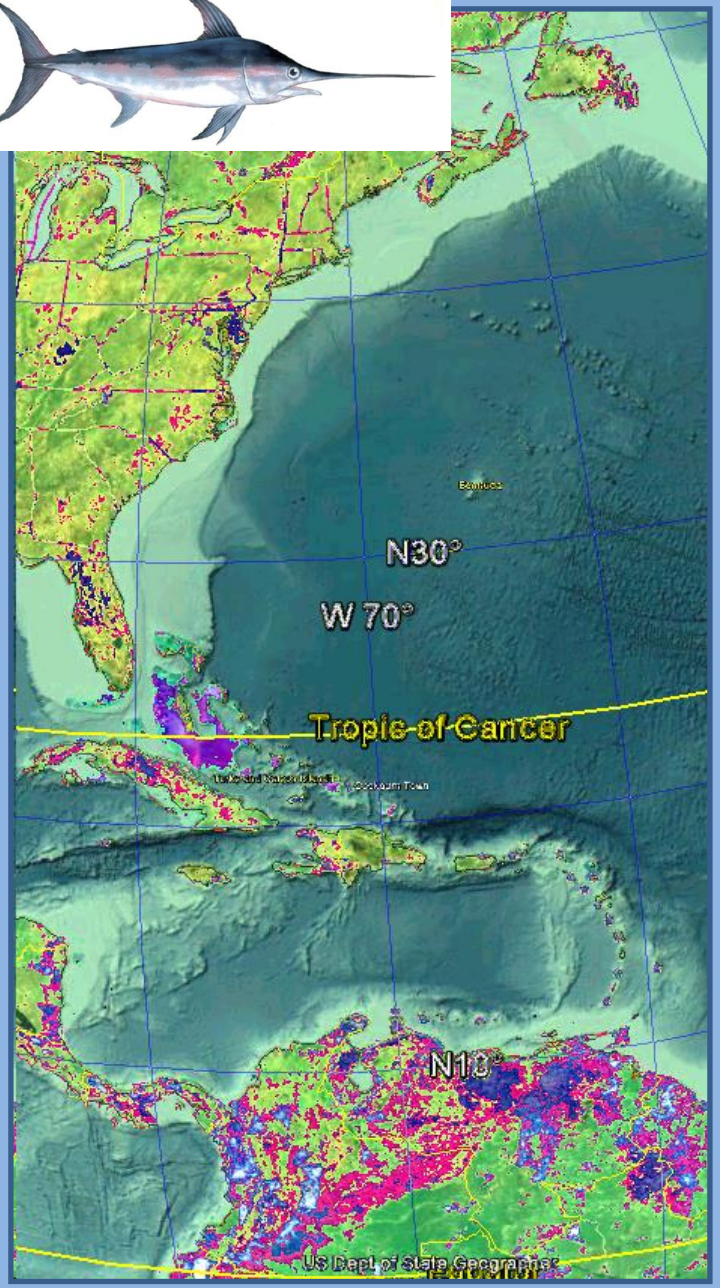


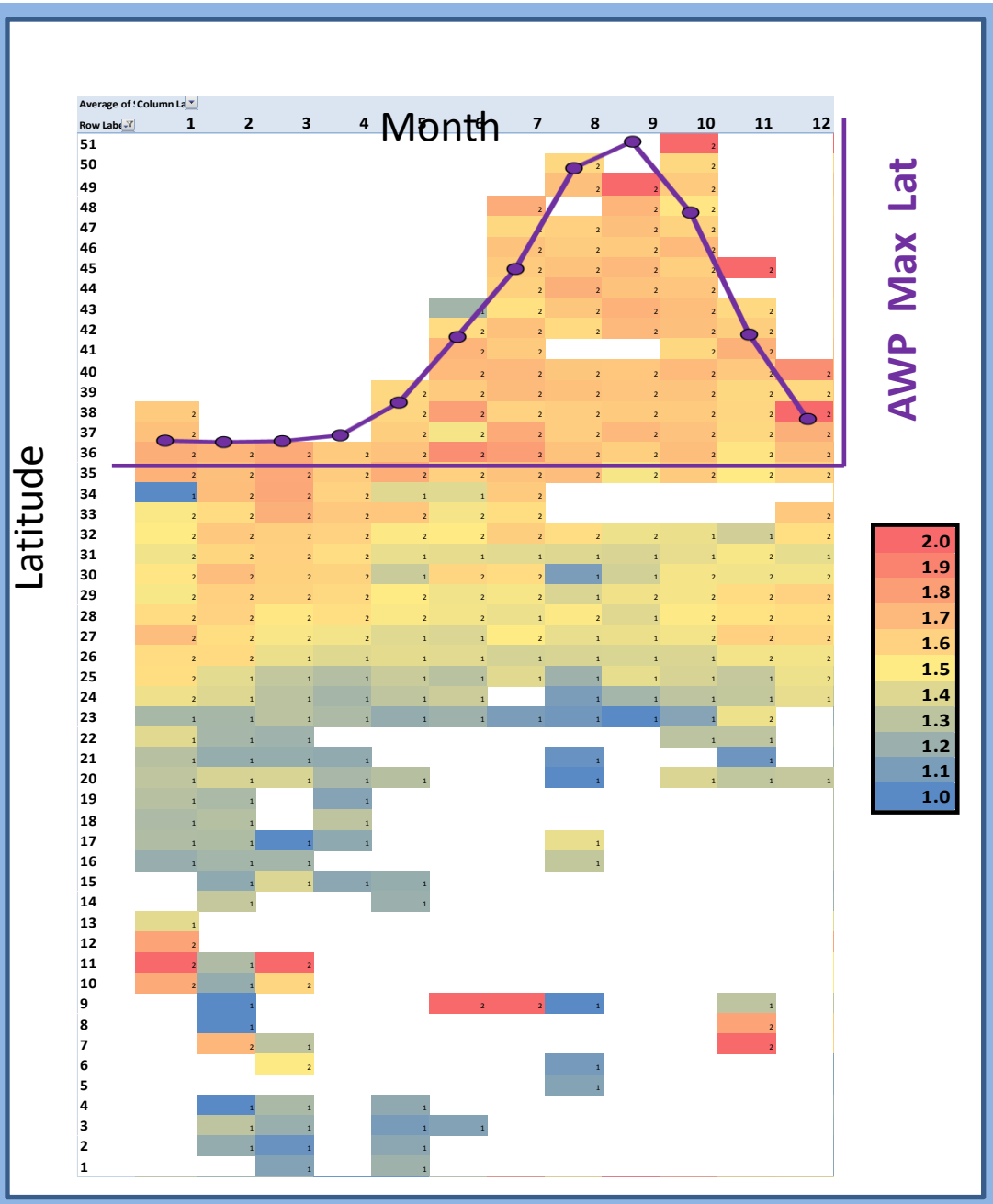




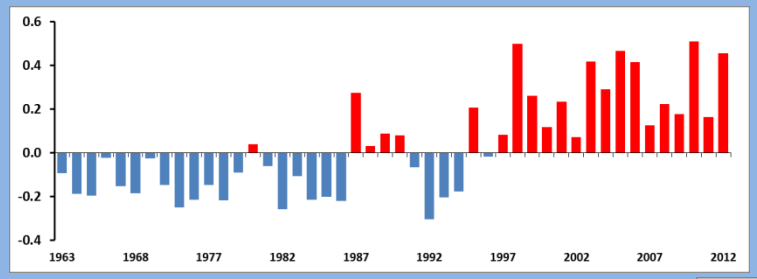
Swordfish Migration Tracks Very Closely to AWP

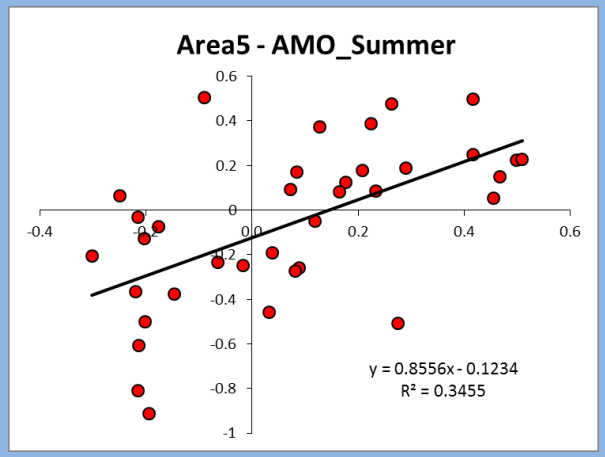


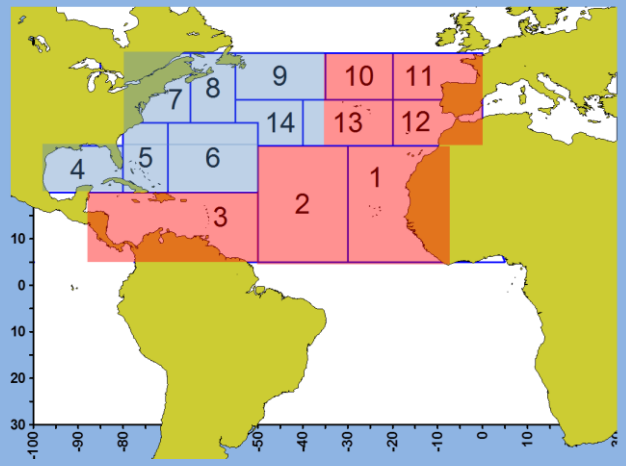


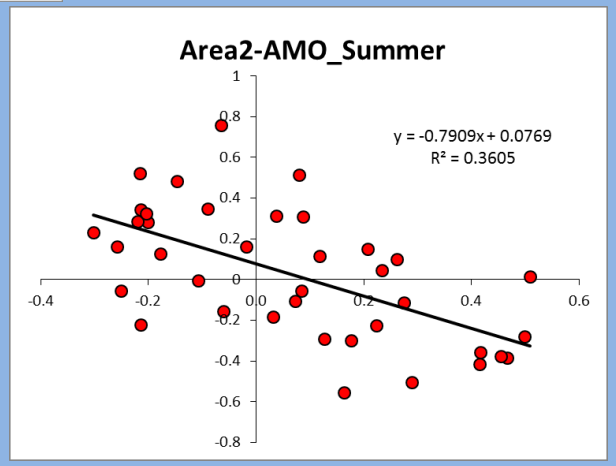


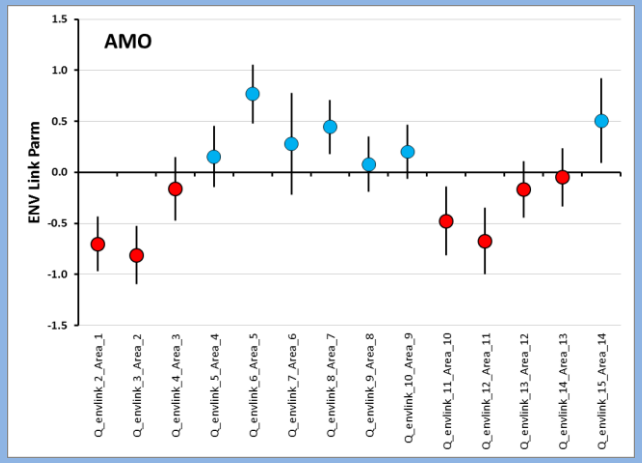
CPUE Deviations Track Changes in the Atlantic Multidecadal

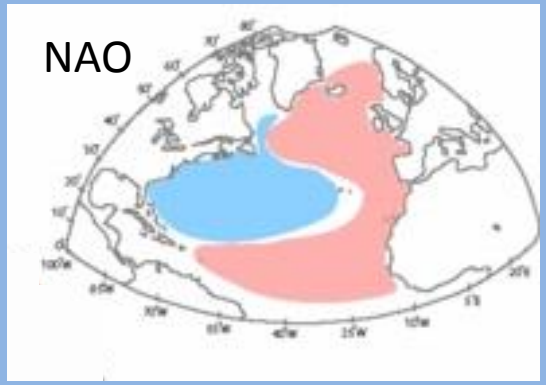












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Atlantic Weak Hook Research

Background

Recommendations from the Pelagic Longline Take Reduction Team (PLTRT) to address the bycatch of marine mammals associated in pelagic longline fisheries have included the development and evaluation of “weak hook” technology to augment the mitigation achieved with the current measures.

Fishermen at the Bluewater Fishermen’s Association’s (BWFA) annual meeting March 2013 have also voiced interest in persueing this technology. Two vessels that fish just south of the CHRSA volunteered to test weak hooks as a possible mitigation measure.

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2013-14 Weak Hook Research Objectives

- Evaluate standard Lingren Pitman (LP) 18/0 circle hooks against custom LP 18/0 “Weak” circle hooks
- Conduct experimental 40 fishing days on two volunteer vessels in the Atlantic
- Compare catch rates on target and bycatch species

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Sets Completed

Area	Sets
MAB	46
NEC	8
FEC	7

Work was concluded in March, 2014

Results are not yet available

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Pelagic Observer Program
2013 Gulf of Mexico Enhanced Observer Coverage

- ***Results: (NON-Experimental)***
- Coverage period was March 8th – June 15th
- 66 observed trips, 628 sets, 38 different vessels, 842 sea days
- Observed Landings: 3,072 YFT 2,508 SWO 16 BET
- Observed BFT catch/bycatch: 19 landed, 19 released alive, 41 released dead, 7 lost (87 total)

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Pelagic Observer Program
2013 Gulf of Mexico and Atlantic Bluefin Tuan Sampling

Samples made available to researchers in 2013:

Sample Type	#Samples	
	GOM	ATLANTIC
Gonads	41	11
Liver	45	15
Skin	47	16
Otolith	31	10
Dorsal spine	45	14
Vert	0	1
Muscle	47	13
Blood	4	0

*sampling is now being accomplished throughout the year.

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Pelagic Observer Program
2013 Gulf of Mexico Enhanced Observer Coverage

Project Objectives:

- Use available funding to target a 50% observer coverage level. This will produce an expected CV for BFT discard estimates of approximately <= 0.2 (***see NOAA Technical Memorandum NMFS-SEFSC-588***)
- Continue collecting data regarding spatial and temporal patterns of BFT bycatch
- Continue collecting biological samples from landed fish or dead discards
- Satellite tagging of yellowfin catch (reimbursed) and bluefin tuna bycatch (reimbursed).

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Biological Sampling Program: Commercial and Recreational fisheries

- *Primary Objective* – Collect BFT otoliths representative of the fisheries, to permit assignment of stock origin and direct ageing
- *Secondary Objectives* –
  - collect additional hard parts (spines, vertebrae) from BFT
  - collect reproductive and muscle tissues from BFT/evaluate reproductive status
  - collect biological samples from other tunas

The program is a partnership between NOAA and academic researchers, with NOAA's Large Pelagic Biological Survey focusing on recreational landings, and academic researchers generally sampling the commercial fishery, building on established relationships with fishers and dealers to improve sampling efficiency.

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2010 - 2013 Comercial Sampling Results

(example: Samples collected Maine through New York)

Year	Otoliths	Spines
2010	334	213
2011	422	258
2012	558	215
2013	605	186
Grand Total	1919	872

* Total not intended to be comprehensive. Does not include samples collected by NOAA port samplers (NOTE: participation by port samplers in the otolith sampling program has been discontinued, following increased participation by academic partners), and the collections of some academic researchers, including commercial samples collected further south.

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2010 - 2013 Recreational Sampling Results

NMFS Large Pelagics Biological Survey

Year	No. Fish	Otoliths	Spines	Vertebra	Gonad
2010	32	13	29	27	13
2011	234	218	217	212	58
2012	235	220	206	185	55
2013	116	107	106	103	30
Grand Total	617	558	558	527	156

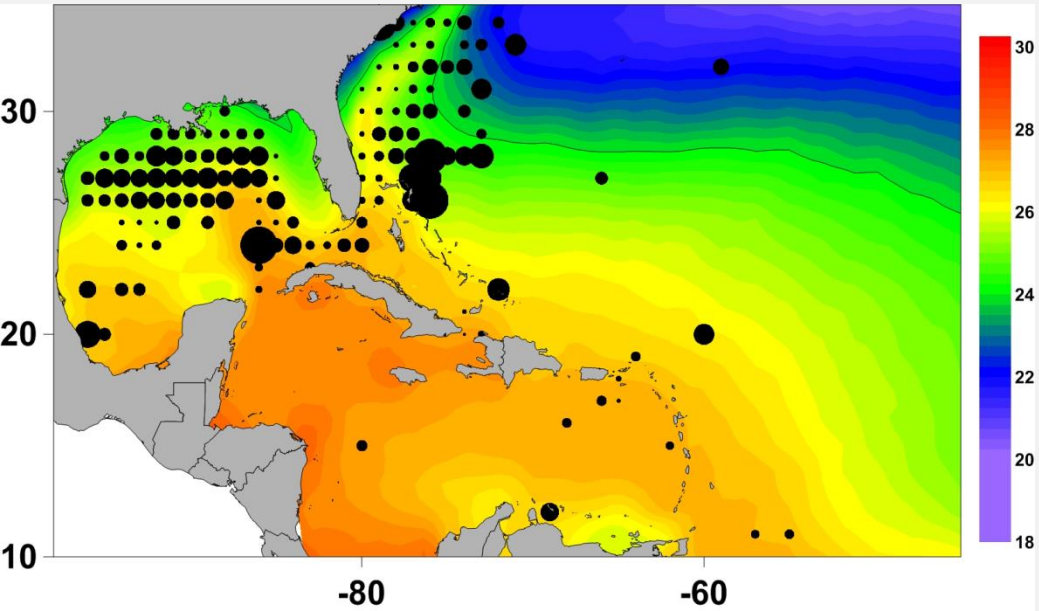
2010: 7 school, 25 large school
2011: 1 young school, 146 school, 69 large school, 17 small med., 1 lrg. med.
2012: 131 school, 83 large school, 20 small med., 1 lrg. med.
2013: 36 school, 69 large school, 11 small med.

Sampled fish 2010-2013 landed in Maryland (47%), Massachusetts (39%), Virginia (6%), New Jersey (6%), New York (1%), and Delaware (1%)

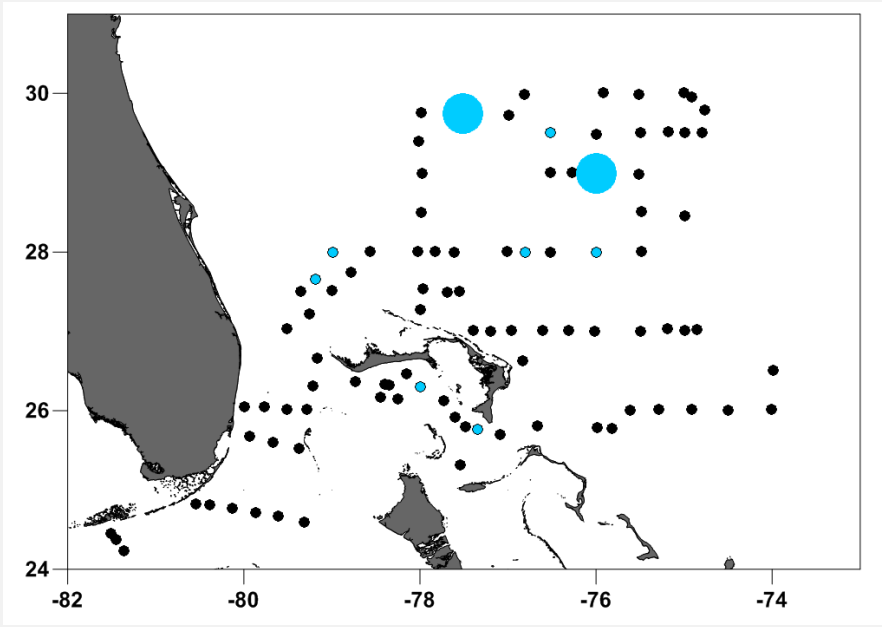
2013 Spring larval bluefin tuna cruise

- Our 2013 spring cruise investigated waters around the Bahamas
- Adult bluefin are frequently caught north of this area during spring
- Preliminary results show scattered collections of bluefin tuna larvae, with a total of 16 collected

Mean adult catch rates and surface temperature during spring



Stations sampled and larval bluefin tuna catch locations, spring 2013



Other larval bluefin tuna research

Aging

- Determination of larval ages from daily otolith rings is underway
- Results will update the current larval age-length key, which has not been updated in ~30 years
- Will also inform research on drivers of recruitment

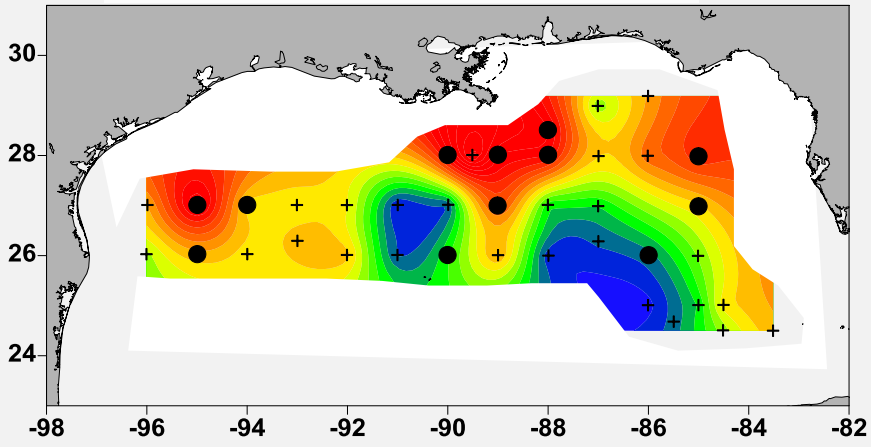
Feeding and diets

- Collaborative project with WHOI to improve understanding of larval ecology

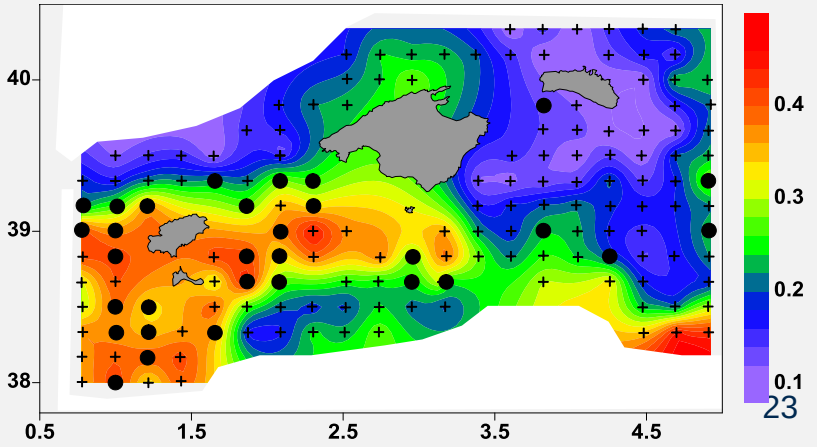
Collaboration with Spanish colleagues

- Comparative analyses between environmental characteristics of spawning grounds in the Gulf of Mexico and Mediterranean Sea

2006: Habitat model Gulf of Mexico



2005: Habitat model Balearic Islands



NOAA-sponsored BFT Research

- ICCAT Atlantic-wide Bluefin Tuna Research Program (GBYP)

The EU will contribute up to 80% of funds to GBYP, but requires other CPCs to contribute matching funds directly to ICCAT

U.S. direct funding contributions are therefore important to leverage funding from the EU

U.S. direct funding contributions to ICCAT GBYP

2011	$175,000
2012	$250,000
2013	$0
2014	$0

NOAA Fisheries does not appear to have statutory authority to send money directly to ICCAT

NOAA-sponsored BFT Research

- U.S. Bluefin Tuna Research Program (NOAA grants to fund extramural research (e.g. genetic studies, tagging etc.)

2011	$510,000
2012	$730,000
2013	$685,000
2014	$652,000

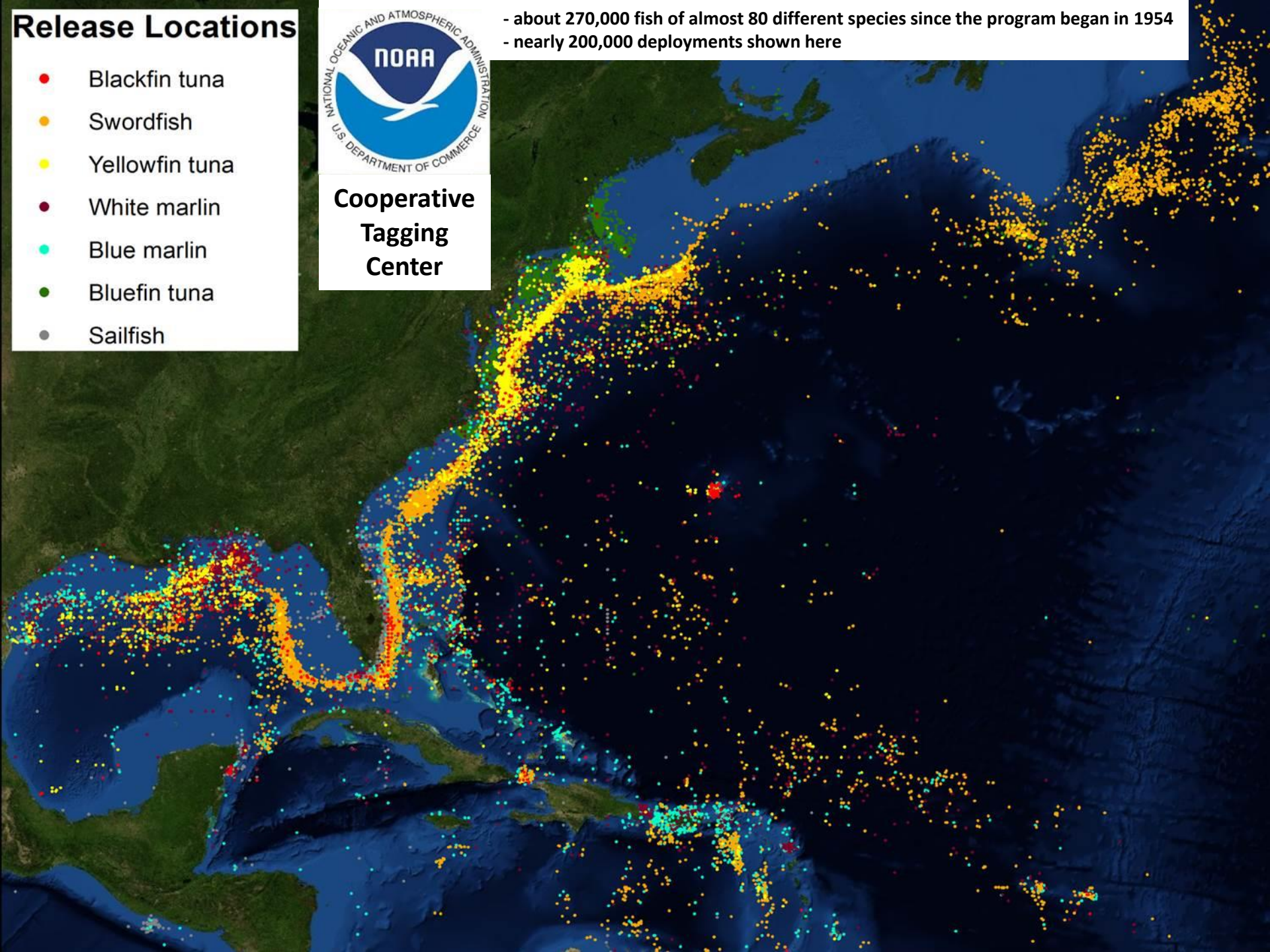
FY2014 Bluefin Tuna Research Program Final Selection

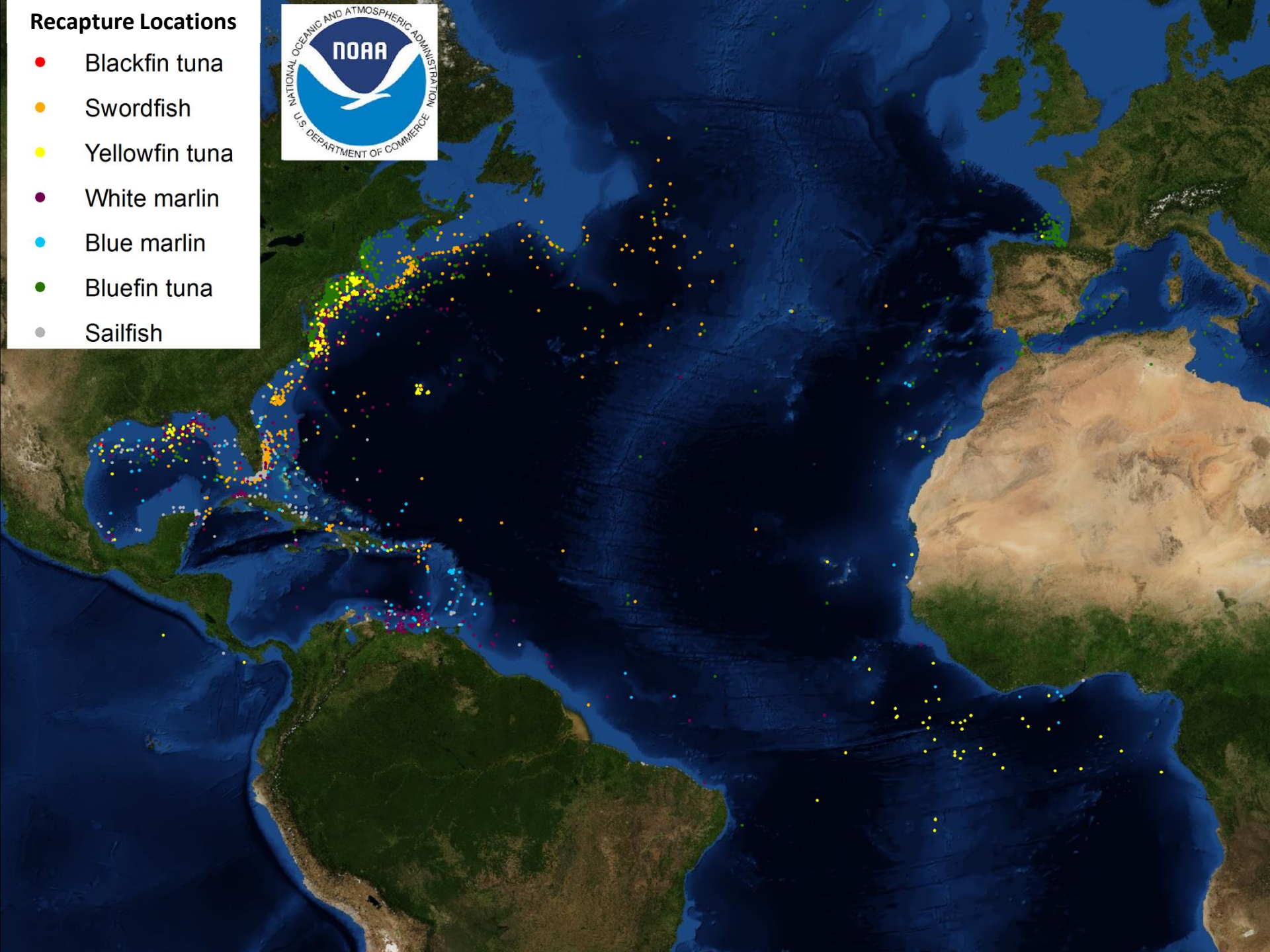
Gulf of Maine Research Institute	INCORPORATION OF STOCK MIXING IN THE ASSESSMENT AND FORWARD PROJECTION OF ATLANTIC BLUEFIN TUNA POPULATIONS
University of Massachusetts Amherst	FISHERIES INDEPENDENT SURVEYS OF JUVENILE ATLANTIC BLUEFIN TUNA
University of Maine	BIOLOGICAL SAMPLING TO DETERMINE AGE, GROWTH AND SEX OF ATLANTIC BLUEFIN TUNA IN THE NW ATLANTIC

NOAA-sponsored BFT Research

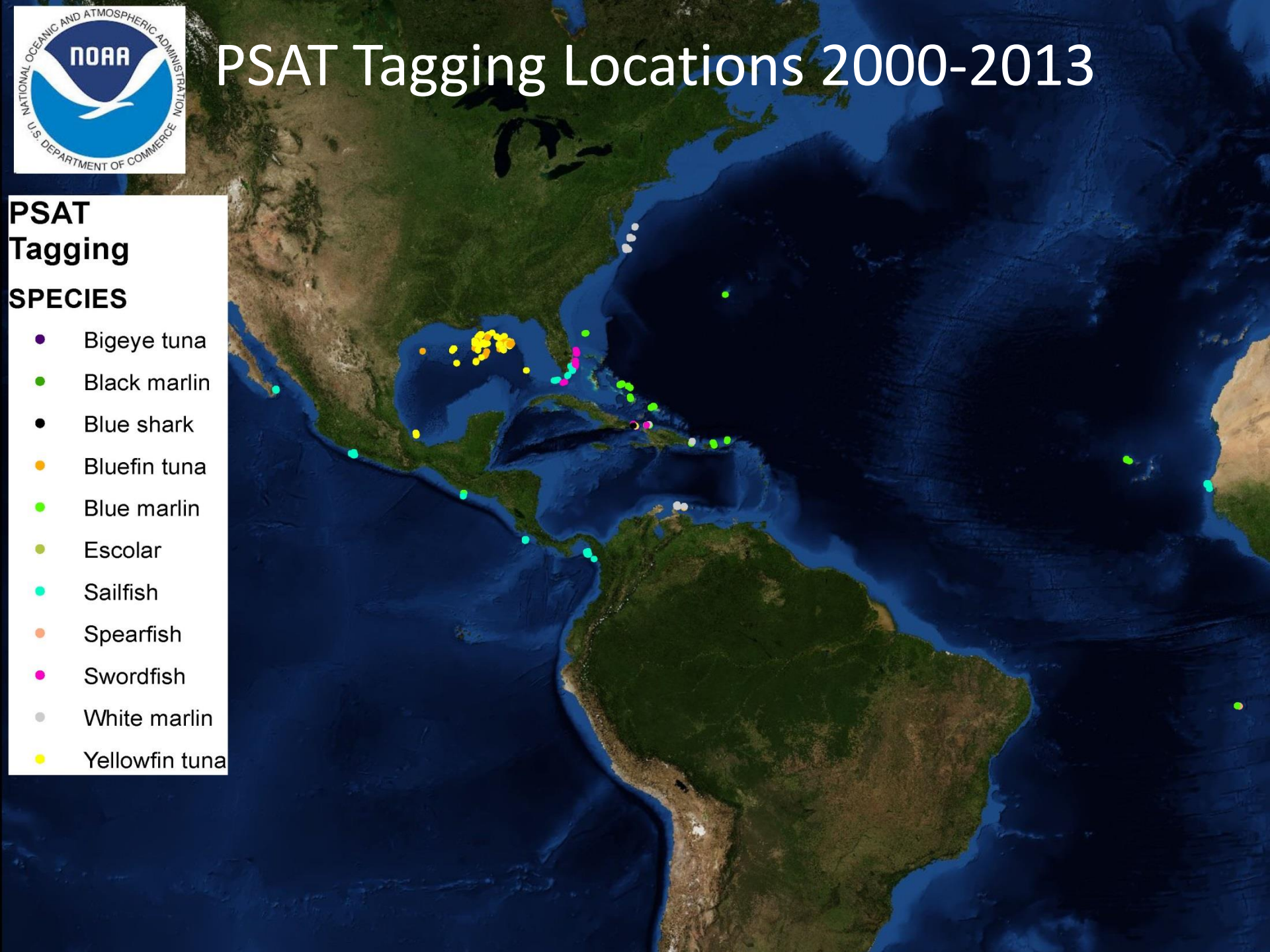
- Contracts (active in 2014)
  - $503,000 2011-2014 Juvenile Tagging Study (UMASS)
  - $700,000 Expanded observer coverage in Gulf of Mexico
  - $90,000 Large Pelagic Biological Survey

- Southeast Fisheries Science Center
  - GOM LL release mortality study (ongoing)
  - Model-assisted larval sampling (ongoing)
  - Bluefin Tuna Close-Kin tagging (proposed)


Release Locations
Blackfin tuna
Swordfish
Yellowfin tuna
White marlin
Blue marlin
Bluefin tuna
Sailfish
NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE
Cooperative Tagging Center
- about 270,000 fish of almost 80 different species since the program began in 1954
- nearly 200,000 deployments shown here


Recapture Locations
Blackfin tuna
Swordfish
Yellowfin tuna
White marlin
Blue marlin
Bluefin tuna
Sailfish
NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

PSAT Tagging Locations 2000-2013



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FISHERIES
SERVICE

QUESTIONS?